ABSTRACT

A ~~device and~~ method for manufacturing ~~thereof for~~ a MirrorBit® Flash memory includes providing a semiconductor substrate and successively depositing a first insulating layer, a charge-trapping layer, and a second insulating layer. First and second bitlines are implanted and wordlines are formed before completing the memory. Spacers are formed between the wordlines and an inter-layer dielectric layer is formed over the wordlines. One or more of the second insulating layer, wordlines, spacers, and inter-layer dielectric layers are deuterated, replacing hydrogen bonds with deuterium, thus improving data retention and substantially reducing charge loss.